
LD 117: Ethernet and Alarm Management

This overlay has a new command format which allows the administrator to:

- 1 configure the Release 22 Alarm Management feature
- 2 identify all Meridian 1 alarms
- 3 configure IP network interface addresses
- 4 perform all IP network related maintenance and diagnostic functions

Both Administration and Maintenance commands appear in this overlay.

New Command Format

LD 117 uses a new command line input interface (input parser) which has the following general structure (where “=>” is the command prompt):

=> COMMAND OBJECT [(FIELD1 value) (FIELD 2 value)... (FIELDx value)]

LD 117 offers the administrator the following configuration features:

- 1 **Context Sensitive Help** - Help is offered when “?” is entered. The Help context is determined by the position of the “?” entry in the command line. If you enter “?” in the COMMAND position, Help text will appear which presents all applicable command options. If you enter “?” in the OBJECT position, HELP text will appear which presents all applicable OBJECT options.
- 2 **Abbreviated Inputs** - The new input parser will recognize abbreviated inputs for commands, objects and object fields. For example, “N” can be entered for the command “NEW” or “R” can be entered for the object “Route”.

- 3 **Optional Fields** - Object fields with default values can be bypassed by the user on the command line. For example, to configure an object which consists of fields with default values, enter the command, enter the object name, press <return>, and the object will be configured with default values. All object fields do not have to be specified.
- 4 **Selective Change** - Instead of searching for a prompt within a lengthy prompt-response sequence, "Selective Change" empowers the administrator to directly access the object field to be changed.
- 5 **Service Change Error Message Consistency** - The parser simplifies usage of service change error messages. LD 117 displays only SCH0099 and SCH0105.

New Alarm Management Capability

With the Release 22 Alarm Management feature, all *processor-based system events* are processed and logged into a new disk-based System Event List (SEL). Events which are generated as a result of administration activities, such as SCH or ESN error messages, *are not* logged into the SEL. Events which are generated as a result of maintenance or system activities, like BUG and ERR error messages, *are* logged into the SEL. Unlike the previous System History File, this new System Event List survives Sysload, Initialization and power failures.

The Event Collector

The Event Collector captures and maintains a list of all processor-based system events. The Event Collector also routes critical events to FIL TTY ports and lights the attendant console minor alarm lamp as appropriate. The System Event List (SEL) can be printed or browsed.

The Event Server

The *Event Server* consists of two components:

- 1 Event Default Table (EDT):** This table associates events with a default severity. By using the CHG EDT command in LD 117, the EDT can be overridden so that all events default to a severity of either INFO or MINOR. The EDT can be viewed in LD 117.

Sample Event Default Table (EDT)

Error Code	Severity
ERR220	Critical
IOD6	Critical
BUG4001	Minor

Note: Error codes which do not appear in the EDT will be assigned a default severity of MINOR.

- 2 Event Preference Table (EPT):** This table contains site-specific preferences for event severities as well as criteria for severity escalation and alarm suppression. The administrator can configure the EPT to:
 - a** override the default event severity assigned by the default table
 - b** escalate event severity of frequently occurring minor or major alarms

Sample Event Preference Table (EPT)

Error Code	Severity	Escalate Threshold (events/60 sec.) (see Note 2)
ERR??? (see Note 1)	Critical	5
INI???	Default	7
BUG1??	Minor	0
HWI363	Major	3
Note 1: The "?" is a wildcard. See section below for explanation of wildcard entries.		
Note 2: The window timer length defaults to 60 seconds. However, this value can be changed by the Administrator. Read "Global Window Timer Length" on page 988 for more information.		

Wildcards

The special wildcard character "?" can be entered for the numeric segment of an error code entry in the EPT to represent a range of events. All events in the range indicated by the wildcard entry can then be assigned a particular severity or escalation threshold.

For example, if "ERR???" is entered and assigned a MAJOR severity in the EPT, all events from ERR0000 to ERR9999 are assigned MAJOR severity. If "BUG3?" is entered and assigned an escalation threshold of 5, the severity of all events from BUG0030 to BUG0039 will be escalated to the next higher severity if their occurrence rate exceeds 5 per time window.

Escalation and Suppression Thresholds

The escalation threshold specifies a number of events per window timer length that when exceeded, will cause the event severity to be escalated up one level. The window timer length is set to 1 minute by default. Escalation occurs only for minor or major alarms. Escalation threshold values must be less than the universal suppression threshold value.

A suppression threshold suppresses events that flood the system and applies to all events. It is set to 15 events per minute by default.

Global Window Timer Length

Both the escalation and suppression thresholds are measured within a global window timer length. The window timer length is set to 1 minute by default. However, the window timer length can be changed by using the CHG TIMER command in LD 117.

TTY Output Format of Events

TTY event output can be formatted or unformatted. Formatted output is also called fancy format. Output format is configurable in LD 117 using the CHG FMT_OUTPUT command.

Fancy Format Output

Formatted output appears in the following template:

```
<severity> <report id> <date> <time> <prim_seq_no> <cp_id> <cp_ad>
DESCTXT: <descriptive text>
OPRDATA: <operator data>
EXPDATA: <expert data>
```

Field	Description
<severity>	"""" (critical); """" (major); """" (minor); " " (blank for info)
<report id>	The report id consists of an event category (e.g. BUG, ERR, etc.) and an event number (1200, 230, etc.). It is padded with blanks at the end to ensure it is 9 characters long (4 characters max. for category and 5 digits max. for number). Examples of report ids are: ERR230, ACD3560, and BUG30.
<date>	DD/MM/YY
<time>	HH:MM:SS
<prim_seq_no>	Primary sequence number of the event (length of 5 digits)
<cp_id>	The Component ID is a 15 character string which indicates the id of the subsystem generating the alarm
<cp_ad>	The Component address is a 15 character string which indicates the address of the subsystem generating the event
<descriptive text>	This is an optional string which describes an event
<operator data>	This is an optional field which holds a 160 character string containing extra text or data to assist the operator in clearing a fault. This field contains any data output with a filtered SL-1 alarm (e.g. loop number, TN, etc.)
<expert data>	This is an optional variable length character string which contains extra text or data for a system expert or designer.

The following are samples of fancy format output:

```
*** BUG015 15/12/95 12:05:45 00345
EXPDATA: 04BEF0FC 05500FBA 05500EE2 05500EC6 05500EAA
BUG015 + 05500E72 + 05500E56 + 0550D96 + 055053A + 04D84E02 + 04D83CFC
BUG015+04D835CA04D81BAE04D7EABE04F7EABE04F7EDF204F7EFC04F7E1B0

* ERR00220 15/12/92 12:05:27 00346
OPRDATA: 51

VAS0010 15/12/92 12:06:11 00347 VMBA VAS 5
```

Unformatted Output

Unformatted data consists of only the report ID and perhaps additional text.
The following is a sample of unformatted output:

```
BUG015
BUG015 + 04BEF0FC 05500FBA 05500EE2 05500EAA 0550E8E
BUG015 + 05500E72 05500E56 05500D96 0550053A 04D84E02
BUG015 + 04D835CA 04D81BAE 04D7EABE 04F7EDF2 04F7E2FC 04&E1B0
BUG015 + 04F7E148

ERR00220 51
VAS0010
```

Ethernet and Point-to-Point Protocol

LD 117 may be used to configure and manage an IP network interface. The Meridian 1 51C, 61C, 81 and 81C Options are hardware-equipped for this advance with an Ethernet controller on the I/O processor (IOP) card. Each IOP card is equipped with a Local Area Network Controller for Ethernet (LANCE) which is preconfigured with an unique Ethernet address. The Option 11C will support Ethernet and Point-to-Point Protocol.

An Ethernet address is a unique 48-bit long physical address assigned to the Ethernet controller on the IOP. On a single CPU M1 system, there is only one IOP which contains one Ethernet interface and an IP address which must be configured. Single CPU systems use only a Primary IP address.

On a redundant or dual CPU M1 system, two IP addresses must be specified: Primary and Secondary. A dual CPU M1 system operating normally will use the Primary IP address. A dual CPU M1 system operating in split mode (the mode used only when upgrading software or hardware) will use the Secondary IP address.

Remote access to Meridian 1 switches is made possible with Point-to-Point Protocol (PPP). LD 117 may be used to configure IP addresses for Point-to-Point Protocol.

The Meridian 1 Ethernet interface is provided by the IOP pack with AUI cable on the back panel on Options 51C, 61C, 81 and 81C. The Option 11C provides Ethernet interface through an ethernet connection on the main cabinet. The Point-to-Point Protocol (PPP) can be established via asynchronous connection to any Meridian 1 SDI port. The IP addresses for Ethernet and PPP interface can be configured in overlay 117, and defaults will be used for all new installation and upgrades.

How to Configure Ethernet and Point-to-Point Protocol

The following tables explain how to configure IP addresses for Ethernet and Point-to-Point Protocol. These two tables are followed by examples.

Configure IP address for the Ethernet Interface	
Step	Action
1	Load Overlay 117
2	Create host entries
3	Assign host to primary and/or secondary IP address(es)
4	Set up Ethernet subnet mask
5	Set up routing entry

Configure IP address for the Point-to-Point Protocol Interface	
Step	Action
1	Load Overlay 117
2	Create host entries
3	Assign host to primary and/or secondary IP address(es)

Example 1
Configure IP address for the Ethernet Interface

Given: Primary IP address: 47.1.1.10 ; Secondary IP address: 47.1.1.11; Subnet mask: 255.255.255.0; Default Gateway IP: 47.1.1.1

Step	Action
1	Load Overlay 117
2	Create host entries. Enter one of the following commands: NEW HOST PRIMARY_IP 47.1.1.10 NEW HOST SECONDARY_IP 47.1.1.11 (for Dual CPU only) NEW HOST GATEWAY_IP 47.1.1.1 (if connected to customer LAN)
3	Assign host to primary and/or secondary IP address(es). Enter one of the following commands: CHG ELNK ACTIVE PRIMARY_IP CHG ELNK INACTIVE SECONDARY_IP (for Dual CPU only) Verify your IP address for Ethernet by entering the PRT ENLK command.
4	Set up Ethernet subnet mask. Enter the command: CHG MASK 255.255.255.0 Verify subnet mask setting by entering the command: PRT MASK
5	Set up routing entry. Enter the command: NEW ROUTE 0.0.0.0 47.1.1.1 (if connected to customer LAN) *Note that 0.0.0.0 = network IP; 47.1.1.1 = gateway IP Verify default routing by entering the command: PRT ROUTE

Note 1: For a single CPU machine, the secondary IP is not used.

Note 2: The secondary IP is only accessible when a system is in split mode.

Note 3: The subnet mask must be the same value used for the M1 Ethernet network.

Note 4: The M1 private Ethernet is used by all M1 devices for system access and control. An internet gateway must be used to isolate the M1 private Ethernet from the customer LAN.

Note 5: Routing information is required if an internet gateway or router connects an M1 private network to the customer's LAN.

Example 2 Configure IP address for the Point-to-Point Protocol Interface

Given: Local IP address: 172.1.1.1; Remote IP address 100.1.1.1

Step	Action
1	Load Overlay 117
2	Create host entries. Enter one of the following commands: NEW HOST LOCAL_PPP 172.1.1.1 NEW HOST REMOTE_PPP 100.1.1.1 (this entry is optional)
3	Assign host to primary and/or secondary IP address(es). Enter one of the following commands: CHG PPP LOCAL LOCAL_PPP 0 (always use interface #0) CHG PPP REMOTE REMOTE_PPP 0 (this entry is optional) Verify your IP address(es) for PPP by entering the PRT PPP command.

Command and Object Descriptions

Command Descriptions

Command	Definition	Description
****	Abort	Abort overlay
BROWSE	Browse	Browse an existing System Event List
CHG	Change	Change/modify object configuration
DIS	Disable	Disable Point-to-Point Protocol
ENL	Enable	Enable Point-to-Point Protocol
NEW	New	Add and configure new object
OUT	Out	Delete existing object
PRT	Print	Print configuration of existing object
RST	Reset	Reset Object
SET	Set	Set ELNK subnet mask to configured value
STAT	Status	Display object statistics
UPDATE	Update	Update INET database

Object Descriptions

Object	Description
DBS	Database
EDT	Event Default Table: Table of default event entries and associated severities
ELNK	Ethernet interface
ELNK ACTIVE	Active Ethernet Link: Change the Primary IP address and host name
ELNK INACTIVE	Inactive Ethernet Link: Change the Secondary IP address and host name
EPT	Event Preference Table: Table of customer's event entries with associated severities
FMT_OUTPUT	Formatted Output: Determine if system events uses formatted (also called fancy) or unformatted output. See "TTY Output Format of Events" on page 989 for more information.
HOST	Host name
MASK	Subnet mask
OPEN_ALARM	Open Simple Network Management Protocol (SNMP) traps setting
PPP	Point-to-Point Protocol interface
PPP LOCAL	Local Point-to-Point Protocol interface address
PPP REMOTE	Remote Point-to-Point Protocol interface address
PTM	Point-to-Point Protocol idle Timer
ROUTE	Configure new routing entry
SELSIZE	System Event List Size: Number of events in System Event Log
SEL	System Event List
SUPPRESS	Suppress count: Number of times the same event is processed before it is suppressed
TIMER	Global window timer length. See "Global Window Timer Length" on page 988 for more information.

Alphabetical list of Administration commands

The commands listed below use the following general structure (where “=>” is the command prompt):

=> COMMAND OBJECT [(FIELD1 value) (FIELD 2 value)... (FIELDx value)]

In the table below, COMMANDS and OBJECTS are in bold typeface and fields are in regular typeface. Fields enclosed in brackets () are default values.

=> Command	Description
BROWSE SEL UP n	Browse up n # of lines in System Event List (SEL)
BROWSE SEL DOWN n	Browse down n # of lines in SEL
BROWSE SEL TOP	Browse to top of SEL
BROWSE SEL BOT	Browse to bottom of SEL
BROWSE SEL FIND xxx	Browse forward to find string xxx in SEL
BROWSE SEL BFIND xxx	Browse backward to find string xxx in SEL
CHG EDT NORMAL	Use Event Default Table (EDT) default severities
CHG EDT INFO	Override EDT; use INFO as default severity for all events except those specified in Event Preference Table (EPT)
CHG EDT MINOR	Override EDT; use MINOR as default severity for all events except those specified in Event Preference Table (EPT)
CHG ELNK ACTIVE hostname	Set Meridian 1 active Ethernet interface IP address
CHG ELNK INACTIVE hostname	Set Meridian 1 inactive Ethernet interface IP address
CHG EPT aa... a INFO x	Change an Event Preference Table (EPT) entry to Information severity, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025) • x = optional entry to escalate value of EPT entry from (0)-Suppress value, as defined by default or your CHG SUPPRESS entry.

=> Command	Description
CHG EPT aa... a EDT x	Change EPT to NT-defined severity from EDT, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025) • x = optional entry to escalate value of EPT entry from (0)-Suppress value, as defined by default or your CHG SUPPRESS entry.
CHG EPT aa... a MAJOR x	Change an EPT entry to Major severity, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025) • x = optional entry to escalate value of EPT entry from (0)-Suppress value, as defined by default or your CHG SUPPRESS entry.
CHG EPT aa... a MINOR x	Change an EPT entry to Minor severity, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025) • x = optional entry to escalate value of EPT entry from (0)-Suppress value, as defined by default or your CHG SUPPRESS entry.
CHG EPT aa... a CRITICAL x	Change an EPT entry to Critical severity, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025) • x = optional entry to escalate value of EPT entry from (0)-Suppress value, as defined by default or your CHG SUPPRESS entry.
CHG FMT_OUTPUT OFF	Turn off formatted output
CHG FMT_OUTPUT ON	Turn on formatted output
CHG MASK nnn.nnn.nnn.nnn	Change subnet mask
CHG PPP LOCAL hostname	Set Meridian 1 local Point-to-point Protocol interface IP address
CHG PPP REMOTE hostname	Set Meridian 1 remote Point-to-point Protocol interface IP address
CHG PTM 0-60	Change Point-to-point Protocol idle timer to specified value (in minutes)
CHG SELSIZE 5-(500)-2000	Change System Event List Size (number of events in SEL)

=> Command	Description
CHG SUPPRESS 5-(15)-127	Change global suppress for events (number of occurrences before event is suppressed)
CHG TIMER (1)-60	Change global timer window length in minutes. See “Global Window Timer Length” on page 988 for more information.
NEW EPT aa... a INFO x	Assign Information severity to new EPT entry, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025) • x = optional entry to escalate value of EPT entry from (0)-Suppress value, as defined by default or your CHG SUPPRESS entry.
NEW EPT aa... a EDT x	Assign NT-defined severity from EDT to new EPT entry, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025) • x = optional entry to escalate value of EPT entry from (0)-Suppress value, as defined by default or your CHG SUPPRESS entry.
NEW EPT aa... a MAJOR x	Assign Major severity to new EPT entry, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025) • x = optional entry to escalate value of EPT entry from (0)-Suppress value, as defined by default or your CHG SUPPRESS entry.
NEW EPT aa... a MINOR x	Assign Minor severity to new EPT entry, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025) • x = optional entry to escalate value of EPT entry from (0)-Suppress value, as defined by default or your CHG SUPPRESS entry.
NEW EPT aa... a CRITICAL x	Assign Critical severity to new EPT entry, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025) • x = optional entry to escalate value of EPT entry from (0)-Suppress value, as defined by default or your CHG SUPPRESS entry.

=> Command	Description
NEW HOST hostname IPaddress	Configure a new host entry. The host name must exist in the host table. The default setting for the Primary IP address is: 137.135.128.253. The default setting for Primary Host Name is: PRIMARY_ENET. The default setting for the Secondary IP address is: 137.135.128.254. The default setting for the Secondary Host Name is: SECONDARY_ENET. Host Name Syntax: A host name can be up to 16 characters in length. The first character of a host name must be a letter of the alphabet. A character may be a letter, number, or underscore(_). A period is used as a delimiter between domain names. Spaces and tabs are not permitted. No distinction is made between upper and lower case.
NEW ROUTE networkIP gateway IP	Configure a new routing entry
OUT EPT aa... a	Delete a single Event Preference Table (EPT) events, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025)
OUT EPT ALL	Delete all entries in Event Default Table (EDT)
OUT HOST nnn	Delete configured host entry
OUT ROUTE nn	Delete configured routing entry
PRT EDT aa... a	Print a single Event Default Table (EDT) event, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025)
PRT EDT aa... a bb...b	Print a range of Event Default Table (EDT) events, where: • aa... a = first entry in EDT event range (e.g. BUG1000, ERR0025) • bb...b = last entry in EDT event range (e.g. BUG1000, ERR0025)
PRT ELNK	Print active and inactive Ethernet interface IP addresses

=> Command	Description
PRT EPT aa... a	Print a single Event Preference Table (EPT) entry, where: • aa... a = an event class with an event number (e.g. BUG1000, ERR0025)
PRT EPT aa... a bb...b	Print specific Event Preference Table (EPT) entry, where: • aa... a = first entry in EPT event range (e.g. BUG1000, ERR0025) • bb...b = last entry in EPT event range (e.g. BUG1000, ERR0025)
PRT EPT ALL	Print all entries in Event Preference Table (EPT)
PRT FMT_OUTPUT	Print formatted output string
PRT HOST	Print network host table entry(ies) information stored in database
PRT MASK	Print subnet mask stored in database
PRT OPEN_ALARM	Print open Simple Network Management Protocol (SNMP) traps setting
PRT PPP	Print Point-to-point Protocol interface address(es)
PRT PTM	Print current Point-to-point Protocol idle timer settings
PRT ROUTE	Print routing table entry(ies) information stored in database
PRT SEL nn	Print most recent record(s) in system event list, where: nn = 0-(20)-SELSIZE. For example, if nn = 50, the 50 most recent events in the system event list will be printed.
PRT SELSIZE	Print System Event List size
PRT SUPPRESS	Print global suppress value
PRT TIMER	Print global timer window length (in minutes). See "Global Window Timer Length" on page 988 for more information.
OUT EPT ALL	Delete all entries in Event Preference Table (EPT)
OUT EPT aa...a	Delete a single EPT entry, where: • aa... a = first entry in EPT event range (e.g. BUG1000, ERR0025)
RST ELNK ACTIVE	Reset Meridian 1 active Ethernet interface IP address to default value

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=> Command	Description
RST ELNK INACTIVE	Reset Meridian 1 inactive Ethernet interface IP address to default value
RST MASK	Reset subnet mask to default
RST PPP LOCAL	Reset local Point-to-point Protocol interface IP address to default value
RST PPP REMOTE	Reset remote Point-to-point Protocol interface IP address to default value
RST PTM	Reset Point-to-point Protocol idle timer to default
UPDATE DBS	Rebuild INET database and renumber host and route entry ID

Alphabetical list of Maintenance Commands

Maintenance commands share the same entry format as Administration commands.

=> Command	Description
DIS HOST n	Remove a host from the run time host table, where: n = host entry number
DIS PPP	Disable Point-to-point Protocol access (this enables PPPD)
DIS ROUTE n	Remove a route from the run time routing table, where: n = route entry number
ENL HOST n	Add a host to run time host table, where: n = host entry number
ENL PPP	Enable Point-to-point Protocol access (Enables PPPD command)
ENL ROUTE n	Add a route to run time routing table, where: n = route entry number
SET MASK	Set ELNK subnet mask to configured value
SET OPEN_ALARM slot address	Add an SNMP (Simple Network Management Protocol) trap destination slot address from 0 to 7. The address format is: x.x.x.x. (TCP/IP) To clear slot, set address to 0.0.0.0.
STAT HOST	Display current runtime host table status
STAT PPP	Show Point-to-point Protocol connection status
STAT ROUTE	Display host and network routing table